

Environment & Heritage Service

Environmentally Sustainable Seaweed Harvesting in Northern Ireland

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Environment &
Heritage Service
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CONTENTS	Page
Environmentally Sustainable Seaweed Harvesting in Northern Ireland	4
Introduction	5
Objectives of this Position Statement	6
Environmental Legislation	6
Wrack Rights and the Ownership of the Shore	7
Sustainability	8
Biodiversity	8
Coastal Processes	9
Harvesting Methods	10
Beach Cleaning	10
Climate Change	11
Mariculture and Non-Native Species	12
Knowledge Gap	13
Contacts	13
Legislation	14
Further Reading	14
ANNEX 1 – Consent Process for Owners/Occupiers of Land	15

Environmentally Sustainable Seaweed Harvesting in Northern Ireland

Environment and Heritage Service Position Statement

This Position Statement was issued in March 2007 and will be reviewed as required.

This document outlines the Environment & Heritage Service (EHS) position on seaweed harvesting in Northern Ireland and was produced through a process of stakeholder engagement.

EHS Mission Statement

Our aim is to protect, conserve and promote the natural and built environment for the benefit of present and future generations.

1. Introduction

Seaweed is a general term for a diverse group of macroscopic marine algae which play an important role in marine ecosystems. These primary producers provide a foundation for many marine food webs and form important habitats for associated marine flora and fauna.

For hundreds of years seaweeds have been traditionally collected by man for use as food, medicine and fertiliser. Seaweeds still play a wide and varied role in modern life and are used as a food resource and a source of industrial and pharmaceutical chemicals.

There are currently a small number of local companies operating in Northern Ireland, which harvest living seaweed and driftweed for a variety of uses including food, cosmetics, horticulture and seaweed baths. Table 1 details the species which these companies harvest. There is limited information on the total tonnage harvested in Northern Ireland, but based on the results of coastal and marine monitoring programmes, EHS considers that both the tonnage and harvesting methods used are currently sustainable. However, EHS would seek to ensure that any future developments in the industry will not have a significant impact on the environment.

The application of an ecosystem-based approach is essential to ensure that a balance is achieved between the importance of seaweeds in marine ecosystems and their use by humans.

Table 1 Seaweed species commercially harvested in Northern Ireland.

Phylum	Species harvested in Northern Ireland	Species Harvested (Common Name)	State Harvested
Green algae	<i>Ulva</i> spp.	Sea lettuce	Attached
Brown algae	<i>Fucus serratus</i>	Serrated wrack	Attached
	<i>Fucus vesiculosus</i>	Bladder wrack	Attached
	<i>Ascophyllum nodosum</i>	Knotted wrack	Attached
	<i>Himanthalia elongata</i>	Thongweed, buttonweed, sea spaghetti	Attached
	<i>Laminaria digitata</i>	Oarweed, kombu	Drift
	<i>Laminaria hyperborea</i>	Oarweed	Drift
	<i>Laminaria saccharina</i>	Seabelt, sweet kombu	Drift and attached
	<i>Alaria esculenta</i>	Dabberlocks	Attached
Red algae	<i>Mastocarpus stellatus</i>	Carrageen moss, Irish moss	Attached
	<i>Chondrus crispus</i>	Carrageen moss, Irish moss	Attached
	<i>Palmaria palmata</i>	Dulse	Attached
	<i>Porphyra</i> spp.	Laver, sloke, nori	Attached
	<i>Corallina officinalis</i>		Attached

2. Objectives of this Position Statement

In accordance with recent UK Government marine conservation initiatives and the EHS Corporate Plan, the objectives of this position statement are to:

- Protect and conserve the marine and coastal environment
- Facilitate the sustainable management of seaweed resources in Northern Ireland
- Work in partnership with others to develop a code of practice.

3. Environmental Legislation

Seaweed harvesting is not currently regulated through a specific licensing or permit system. However, it is controlled by the following legislation in terms of its impact on nature:

- The Environment (NI) Order 2002
- The Conservation (Natural Habitats etc) Regulations (NI) 1995 (commonly referred to as the Habitats Regulations)
- The Wildlife (NI) Order 1985.

EHS is the lead Agency for advising on and implementing the Government's environmental policy and strategy in Northern Ireland and is responsible for enforcing this legislation.

The Environment (NI) Order 2002 and the Conservation (Natural Habitats) Regulations (NI) 1995 are mainly designed to protect areas deemed to be particularly important for nature conservation at national and international levels. They are formally designated by the Department of Environment as Areas of Special Scientific Interest (ASSIs) and Natura 2000 sites (Special Areas of Conservation and Special Protection Areas). Almost all coastal areas in Northern Ireland are either in or near one or more of these designated sites. For further information, see the Designated Sites section of the EHS website.

This legislation imposes a wide range of controls on the activities of persons that would have a direct or indirect impact on designated sites:

- (a) Owners and occupiers of land within a site must obtain written consent from EHS before undertaking a potentially damaging activity, such as seaweed harvesting. See Annex 1 for details of the consent process.
- (b) Public bodies (e.g. District councils, other government departments) with powers to consent to activities in or near designated sites, can

only grant consent to activities under the terms specified in the legislation.

(c) Statutory undertakers (e.g. Utility companies such as NIE) must undertake works within designated sites under the terms specified in the legislation.

(d) The public in general who enter a designated site must not intentionally or recklessly destroy or damage the site or any of its features.

It should be noted that failure to comply with these controls is a criminal offence, normally punishable by a maximum fine of £20,000 for less serious offences or by an unlimited fine for the most serious offences. In setting the financial penalty, the court is obliged to consider any financial benefit obtained by the defendant in breaching these controls. In addition to a fine, the court may impose an order requiring the site to be restored – the costs of which will be payable by the defendant.

The Wildlife (NI) Order 1985 is designed to protect particularly rare or vulnerable wildlife species. It prohibits the killing, taking, injuring or disturbance of protected wildlife species – including seals, otters and breeding birds. In addition, the Order prohibits the introduction of non-native species. It is a criminal offence to breach these controls.

EHS Position on Environmental Legislation

- EHS will support a responsible industry which complies with the requirements of environmental legislation.
- If necessary, EHS will take criminal proceedings against those persons who fail to comply with this environmental legislation.
- EHS will monitor the need for specific legislation to regulate seaweed harvesting.

4. Wrack Rights and the Ownership of the Shore

In Northern Ireland, both the seabed (to the 12 nautical mile territorial limit) and the foreshore (the area between mean high and mean low water) mainly belongs to the Crown. Coastal land above the high-water mark is usually in private ownership.

As an extension of the public right to fish in and gather items from the sea, members of the public can take fresh seaweed which is floating in the sea. Floating seaweed on the foreshore (occurring either as fresh vegetation or drift) can be harvested as part of this public right when the tide is in. However, seaweed remaining as fresh vegetation or drift when the tide is out cannot be taken, unless some other legal basis for taking seaweed is

established. Likewise, seaweed cast above the high water-mark belongs to the owner of the land. There is no public right to take seaweed in these circumstances and another legal basis for claiming a right to take seaweed must be established.

A private individual or individuals who have been gathering seaweed from the shore for a period of time may be able to assert a legal right to do so (sometimes referred to as a 'wrack right'). An informal right of this nature may be recognised where the person or persons concerned have been taking seaweed from a particular part of the shore for more than 20 years. However, such rights are not unrestricted. While taking small quantities of seaweed for personal use is allowed, taking large quantities which might damage the seaweed 'crop' in a particular area or have an adverse effect on the local marine environment is not permissible under nature conservation laws.

5. Sustainability

Sustainable development is defined in the Northern Ireland Sustainable Development Strategy as "*Development which meets the needs of the present without compromising the ability of future generations to meet their own needs.*"

In Northern Ireland, the Regional Development Strategy, The Northern Ireland Biodiversity Strategy, and the Sustainable Development Strategy for Northern Ireland outline the Government's commitment at a strategic level to support and promote sustainable development, the effective protection of the environment and biodiversity and the prudent and sustainable use of natural resources.

EHS Position on Sustainability

- EHS supports the sustainable use of natural seaweed resources.
- EHS will co-operate with the industry to determine sustainable limits.
- EHS will support the development of a Code of Conduct for the seaweed industry in Northern Ireland.

6. Biodiversity

Biodiversity is the variety of all living things. Seaweeds are primary producers which form the basis of many food chains and play an important role in marine and coastal ecosystems.

Living seaweed acts as an important habitat for marine and coastal species and can provide spawning and nursery grounds for many marine species,

including several commercially important fish. The diverse invertebrate and fish communities associated with seaweed beds also provide an important foraging habitat for birds and mammals.

Driftweed is a term used to describe seaweed which has been washed ashore by the wind and sea. It is an important component of the coastal ecosystem, providing food and shelter for invertebrates, which in turn act as a food source for other species. Harvesting living seaweed or driftweed can affect the overall balance of the marine ecosystem.

Seaweed harvesting can have significant effects on the availability of the harvested species itself e.g. a recent report has indicated that a combination of different factors including overexploitation and increasing seawater temperatures may have led to the decline of *Laminaria digitata* in France. Seaweed harvesting activities can also disturb wildlife and cause damage to the substrate as a result of the methods used to harvest seaweed or gain access to harvesting sites.

EHS Position on Biodiversity

- EHS is committed to maintaining and conserving Northern Ireland's marine and coastal biodiversity.
- EHS will support environmentally sustainable methods of seaweed harvesting and adherence to a code of conduct.
- EHS will refuse consent for any operation/activity that is likely to have a significant adverse impact upon the feature interests for which a designated site was declared.
- EHS will not permit disturbance to any species protected under The Wildlife (Northern Ireland) Order 1985.

7. Coastal Processes

Living seaweed (e.g. kelp beds) can play an important role in coastal processes by dissipating wave energy and turbulence, thereby protecting the coast from erosion. It also captures sediment and nutrients, improving the food supply for dependent biological communities. In addition, the relatively sheltered seaweed environment provides protection for many marine animals from the extreme physical stresses associated with high energy coasts. Removal of living seaweed may result in higher wave energy impacting the coast, increasing the likelihood of coastal erosion in soft sediment areas.

Driftweed can play a role in sand dune development by enabling pioneering salt tolerant plants to establish along the driftline. Removal of driftweed can adversely affect this process.

EHS Position on Coastal Processes

- EHS aims to protect coastal environments and their dependent communities by ensuring that natural coastal processes are not adversely interrupted.
- EHS will refuse consent for any operation/activity that is likely to have a significant adverse impact upon the feature interests for which a designated site was declared.
- EHS will not support any harvesting activity which will have a significant adverse impact on coastal processes.

8. Harvesting Methods

Seaweed can either be harvested manually using hand held tools or mechanically using machinery. In Northern Ireland, seaweeds are largely harvested using hand held tools. EHS believes that this technique is the least damaging ecologically and that mechanical harvesting techniques could threaten the marine ecosystem, undermining the sustainable use of the seaweed resource.

EHS Position on Harvesting Methods

- EHS will support environmentally sensitive methods of seaweed harvesting.
- EHS will not support mechanical harvesting unless it can be demonstrated that it will not have a significant adverse impact on the environment

9. Beach Cleaning

Some resort beaches are regularly cleaned, either manually or mechanically, resulting in the removal of driftweed. However, beach cleaning can have a very significant adverse impact on marine and coastal processes and biodiversity. The Blue Flag criteria states that *"algae or other vegetation should be left to decay on the beach unless it constitutes a nuisance"* and *"Only if it becomes absolutely necessary the algae or other vegetation should be removed and consideration must then be given to disposing of it in an environmentally friendly way e.g. through composting or using it as fertiliser."*

EHS Position on Beach Cleaning

- EHS promotes the retention of driftweed on beaches because of its valuable role in sand dune development and as a habitat and food source for animals.
- EHS will refuse consent for beach cleaning operations/activities that are likely to have a significant adverse impact upon the feature interests for which a designated site was declared.
- EHS advises that driftweed should be left to decay on beaches and a nature conservation organisation should be consulted if it is considered that it constitutes a nuisance.
- EHS would support the development of beach zonation plans for beaches which are regularly cleaned.

10. Climate Change

It is predicted that sea level in the UK could rise by up to 69cms by 2080. Sea level rise could significantly alter the shape of the coastline and depth distributions near to the shore, changing the hydrography of the intertidal and subtidal zones. This in turn would impact on seaweed species distribution and abundance. In addition, predicted increases in the frequency of storm surges and larger waves could also significantly impact on seaweeds through increased offshore erosion.

It is predicted that UK temperatures will increase by 1.5°C - 4°C by 2080. Seaweeds are particularly sensitive to temperature and their distribution is largely determined by the limiting effect of temperature. Due to the North Atlantic Drift, Ireland has milder air and sea temperatures than those of other countries at similar latitudes. The mild temperature allows both northern (cold-adapted) seaweed species and southern (warm-adapted) seaweed species to coexist. Some of these species are at the edge of their geographical distribution in Ireland and are therefore most likely to respond to climate change.

It is early days in terms of climate change research and it is uncertain how particular species will react to a changing climate. However, recent research through the Marclim project has indicated that the distribution of some seaweed species in Ireland has already changed, possibly as a result of climate change. To determine how seaweeds are responding to a changing climate, EHS will contribute to long term data sets on seaweed distribution and abundance and will review its position on seaweed harvesting accordingly.

Government in Northern Ireland is committed to implementing the UK Climate Change Programme, both in terms of cutting greenhouse gas emissions and examining likely impacts and adaptations which need to be considered.

EHS Position on Climate Change

- EHS aims to promote the sustainable management of the seaweed resource to ensure that it is best able to adapt to a changing climate.
- EHS will encourage the collation of long term data sets on seaweed distribution and abundance.

11. Mariculture and Non-Native Species

Marine aquaculture (mariculture) offers an alternative to harvesting natural seaweed populations. There are positive aspects of mariculture, such as creating new habitats for marine organisms and contributing to the removal of excess nutrients in coastal waters and estuaries. However, it can also have negative implications for marine and coastal biodiversity through the destruction and degradation of habitats and competition with natural populations for nutrients and space.

The introduction of non-native species for cultivation or the unintentional introduction of non-native species may also have significant impacts on the marine environment. Invasive non-native species can have significant environmental, economic and public health impacts and are now considered to be the second most important threat to global biodiversity. The introduction of species beyond their natural range is rising sharply, due to increased transport, trade, travel and tourism and the greater accessibility of global goods.

In Northern Ireland, it is an offence under the Wildlife (Northern Ireland) Order 1985, to plant or otherwise cause to grow in the wild any plant which is included in Part II of Schedule 9.

EHS Position on Mariculture and Non-Native Species

- EHS will support environmentally sustainable mariculture activities.
- EHS will refuse consent for any mariculture operation/activity that is likely to have a significant adverse impact upon the feature interests for which a designated site was declared.
- Consistent with the terms of the Wildlife (Northern Ireland) Order 1985, EHS will not permit the introduction of non-native species for the purpose of seaweed harvesting or cultivation.

12. Knowledge Gap

EHS has recently commissioned a review of existing knowledge of the status of the seaweed resource and industry in Northern Ireland and the potential impacts that harvesting can have on biodiversity and coastal processes. This report highlighted the knowledge gap that exists and made recommendations on future research requirements.

There is currently limited information on the biomass, distribution and productivity of living seaweed and driftweed around the Northern Ireland coastline, although some information exists eg biomass estimates for *Ascophyllum nodosum* in Strangford Lough and the Ards Peninsula. Very little research has been carried out in Northern Ireland on the direct and indirect effects of harvesting on biodiversity and coastal processes. In addition, there is a lack of specific information on the carrying capacity of marine ecosystems to support seaweed harvesting and mariculture.

This position statement is based on the best available knowledge to date and will be reviewed as our knowledge base expands.

EHS Position on the Knowledge Gap

- EHS will encourage the collection of baseline information on driftweed biomass and living seaweed biomass, distribution and productivity.
- EHS will encourage research into the direct and indirect impact of harvesting living seaweed and driftweed on biodiversity and coastal processes.
- EHS will encourage research into the carrying capacity of marine ecosystems to support seaweed harvesting and mariculture.

13. Contacts

For information on Designated Sites please contact

EHS, Conservation Designations and Protection
Tel: (028) 9056 9539

For information on Biodiversity Policy and Wildlife Order issues please contact

EHS, Biodiversity Unit
Tel: (028) 9056 9604

14. Legislation

The Wildlife (Northern Ireland) Order 1985

The Environment (Northern Ireland) Order 2002

The Conservation (Natural Habitats, etc) Regulations (Northern Ireland) 1995

15. Further reading

EHS Research and Development Series Report - Assessment of the Effects of Commercial Seaweed Harvesting on Intertidal and Subtidal Ecology in Northern Ireland

The Ecosystem Approach.

Regional Development Strategy

Northern Ireland Biodiversity Strategy

Blue Flag Beach Criteria and Explanatory Notes 2007 - 2008

Sustainable Development Strategy for Northern Ireland

Marclim

Werner A, Kraan S (2004) Review of the Potential Mechanisation of kelp harvesting in Ireland. Marine Environment and Health Series No17, Marine Institute

Brundtland report on the Environment and Development, 1987

ANNEX 1 – Consent Process for Owners/Occupiers of Land

If you intend to harvest seaweed in Northern Ireland, you should first contact EHS to find out if the proposed harvesting area is within or near a designated site. If it is, you should follow the process outlined below:

Step 1 - If you are not the legal owner/occupier of the proposed harvesting area, you must first obtain permission to harvest seaweed from the legal owner/occupier.

Step 2 - The legal owner/occupier must then apply for written consent from EHS. Consent application forms can be obtained from the Conservation, Designations and Protection Unit in EHS. You may find it helpful to discuss your proposal with EHS staff prior to submitting your consent application. As a general rule of thumb, the following information will help EHS determine the impact of your proposal:

- Baseline information on the proposed site/s, including the available biomass, percentage cover and estimated annual growth rate of the species you propose to harvest, as well as an assessment of the physical attributes of the site eg slope, substrate, wave exposure etc.
- A harvesting plan, detailing rotation cycles, quantity of each species of seaweed you propose to harvest and the method you intend to use.
- Details of any measures you will put in place to minimise damage and disturbance to wildlife and the surrounding environment.

Step 3 – EHS will consider your application and within three months will either grant or refuse consent to harvest seaweed. An appeal process exists for refusal of consent or inclusion of conditions.

Step 4 – If EHS grants consent, you may proceed with harvesting. EHS may include specific conditions to the consent, which must be adhered to.

Step 5 – When harvesting, it is good practice for harvesters to record and monitor the following information. This will help you assess and revise your harvesting programme:

- location of harvesting area, including grid reference
- date, time & tidal state
- date of previous cropping
- harvesting method used
- size of patch cropped

- percentage cover of the target species within the cropped patch using the SACFOR Scale *
- average length of target species within the cropped patch
- reproductive state of target species within the cropped patch
- wet weight of each species harvested
- photographs of the harvesting area before and after cropping

* SACFOR Scale

Superabundant – greater than 80% cover

Abundant – 40-79% cover

Common – 20-39% cover

Frequent – 10-19% cover

Occasional – 5-9% cover

Rare – 1-5% cover



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